

Abstract of the Disclosure

Briefly stated the present invention provides an active endoscopic system which contains an electromagnetic radiation system located at the distal end of the endoscopic device allowing for variable intensity application of desired wavelengths in the application of PhotoDynamic Therapy(PDT) over a broad area. The power sources are varied according to the needs of a specific application. Various attachments and configurations may be used in conjunction with the endoscopic device to enhance performance of a desired application. Such enhancements may include but are not limited to multi-balloon systems for centering the apparatus or limiting the treatment area, fiber optics for directly viewing the area of treatment, vacuum systems for the removal of waste product, delivery tubes for the delivery of aminolevulinic acid (ALA) or other photosensitizers, and other fiber optics for illumination of treatment area. A preferred embodiment of this system for use in PDT employs a multitude of low wattage diodes at the distal end of the endoscope, a scattering glass, cooling channel, external cooling unit, an inflatable balloon with a reflective surface, a tube connected to an external pump for the delivery and removal of photosensitizers. Each diode is selected to emit the respective frequency needed to activate the selected photosensitizer. Alternatively, a range of diodes may be selected to maximize the activation of the photosensitizer. Other embodiments include a double walled balloon fed through a channel of an endoscope which would allow mixing of chemiluminescent chemicals as an alternative light source within the channel between the balloons. Still other embodiments include different electromagnetic sources for the emission of microwaves or radio frequency devices. The prime benefit of this invention is the placement of the electromagnetic radiation source at the distal end of the device to bring the light source directly to the desired site.